ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES

ASSESSMENT OF DELAY FACTORS IN CONSTRUCTION INDUSTRIES DURING THE COVID-19 PANDEMIC PERIOD: THE CASE OF PUBLIC SERVANTS SOCIAL SECURITY AGENCY (PSSSA)

BY

HAYAT ABDO

A THESIS TO BE SUBMITTED TO THE DEPARTMENT OF PROJECT MANAGEMENT AS A PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF ARTS (MA) DEGREE IN PROJECT MANAGEMENT

July, 2021

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DECLARATION

I, the undersigned, declare that this thesis is my original work; prepared under the guidance of **Dr. DerejeTeklemariam (Associate Professor).**All sources of material used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

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St. Mary's University, Addis Ababa **July, 2021**

ENDORSEMENT

This thesis has been submitted to St. Mary's University School of Graduate Studies for examination with my approval as a university advisor

Dr. DerejeTeklemariam (Associate Professor) _____

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Signature
July, 2021

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LIST OF ABBREVIATIONS

COVID	Corona virus Disease of 2019
IUCN	International Union for Conservation of Nature
M&E	Monitoring and evaluation
PMI	Project management institute
RII	Relative Importance Indices
SD	Standard deviation
UNCTAD	United Nations Conference on Trade and Development
WHO	World health organization

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ABSTRACT

As the spread of COVID-19 has continued since December 2019, possessions around the globe have changed how we live our lives, mostly from physical to virtual interactions, such as going to college and doing our jobs; however, some activities like construction have a hard time to perform virtually. Thus, the construction industry is one of the main sectors that provide important ingredient for the development of countries economies of global GDP.However, many projects experience extensive delays during in the construction sector is a global phenomenon and the construction sector in Ethiopia is no exception

Therefore, this study aims to assess the delaying factors in construction projects of public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower buildings during COVOD-19 pandemic period, the impact caused by the pandemic and to body of knowledge areas being practiced assistance of managing the delay. A questionnaire survey was used for data collection and 106 questionnaires were completed and analyzed. Using a simple ordinal scale based on 5-points Likert scale professionals, contractors, project engineers, project architects, directors, project managers, and finance departments expressed their views on the relative importance on factors of delay related to consultant, contractor and client. Feedback from a survey administered to the clients, contractors, and consultants was analyzed using the Relative Importance Index (RII). Results showed that delay in progress because of foreign trade and shipments, loss of workers due to illness, government related inconvenience, unrealistic contract duration, inaccurate time estimates, improper project planning and scheduling, poor management and supervision, change in scope of design and poor planning and coordination's are ranked by clients, contractor and consultants as the main magnitude of the construction delay during covid-19 pandemic period. Construction frontline players are recommended to put their efforts on the identified key factors in relation to their magnitudes of influence. By doing so, the causes of project delays in the selected site could be significantly reduced or controlled, which will ultimately lead to the on time completion of the construction project of (PSSSA).

Key words: construction sector, covid-19, Construction project delay, economic growth, relative importance index

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The construction industry is one of the main sectors that play a significant role in the economy of developing countries. Studies have established the significant relationships exist between the rate of growth of the construction industry and the rate of macroeconomic growth of developing countries. For example, in many developing countries, major construction activities account for about 80% of the total capital assets, 10 % of their GDP, and more than 50% of the wealth invested in fixed assets. Also, the industry provides high employment opportunities, probably next after agriculture (Ofori, 2006), (Jekale, 2004). Regardless of the significant contribution to the economy of developing countries and the critical role it plays the performance of the industry remains generally low. As Idoko (2008) noted, many projects in developing countries encounter considerable time and cost overruns, fail to realize their intended benefit, or are even totally terminated and abandoned before or after their completion. AsOfori(2006) &Jekale (2004) concluded, the construction industry in developing countries failed to meet the expectations of governments, clients, and society as a whole. Moreover, the development of the construction industry in developing countries generally lags far behind other industries in those countries and their counterparts in developed nations.

Numerous construction projects initiated by most third-world countries have failed to owe to several reasons. Among these reasons, poor planning of the project implementation process and ineffectual monitoring and evaluation of projects are major to mention. Additionally changes in project scope, project complexity, inadequate planning, impropriate project schedule, design variation, inaccurate engineer estimate, and inefficient material management are also major reasons for construction delays. Similar to the case with other developing countries, the Ethiopian construction industry shares many of the problems and challenges, perhaps with greater severity. Given the critical role the construction industry plays in Ethiopia and other developing countries, and the poor level of performance of the industry in those countries, improving the performance of the industry ought to be a priority action.

In normal times depending on the cause and extent of the delay the result is entitled to the contactor, the client, consultants, and these bodies are accountable for the delay damages dependent on the contractual allocation of risk whether the delay is excusable which include compensable, non-compensable, or Force majeure event where the control of a party and prevents it from performing its contractual obligations and non-excusable delay.

The novel corona virus (COVID-19) pandemic is one to mention as force majeure since it is an unforeseeable and unavoidable incident it has and will continue to have a profound effect on the development and construction industries. After COVID-19 has been declared a Public Health Emergency of International Concern by the World Health Organization (WHO). The pandemic has been and will continue to have a substantial impact on the construction delays as a result of disruption to restricted import and export, Inadequate project planning, executing monitoring and evaluation for force majeure(non-compensable delays), loss of workers due to illness, material cost increments, change in scope of design, variations, working drawings, project construction materials, change in government regulations and laws, change in schedule, reduction of workers to minimize the rise of congestion supply and financial impacts disrupting payment

In Ethiopia, the continued spread of COVID-19 disruptive effects of the virus is already evident as enumerable events, construction projects, business, and schools shut their doors. As of many construction projects in Ethiopia, One of the construction sectors that COVID-19has a vicious effect on is the site of public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower buildings located in Addis Ababa Ethiopia Piassa area, this project is intended to be submitted Initially October 2020 but in regards to several other reasons including the ongoing COVID-19 pandemic, it was moved to Feb. 10, 2021. Therefore to ensure projects are implemented successfully to create the needed job opportunities, provide the needed health, educational and economic infrastructure, satisfaction of involved contactors, clients consultants, and other stakeholders, achieve project quality, budget, and schedule and contribute to the socio-economic development of nations, it is important to understand construction contracts as COVID-19 impacts continue to unfold the researcher recommend key several actions to take properly evaluate and plan for force majeure event as review contract, identify specific impacts, formulate a plan and communicate to inform throughout the life cycle of public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building project delivery.

1.2 STATEMENT OF THE PROBLEM

Every construction project has its own goal and objective to achieve the performance can be measured by key indicators for evaluation performance is related to many topics and factors such as time, cost, quality, client satisfaction, productivity, and safety (Ahmed, Azhar, Castillo, and Kappagantulla, 2002). Construction delays can be defined in many ways, Stumpf G. (2000) summarized delay as have time overrun or need an extension of time to complete the construction project. According to Theodore (2009), delay can be categorized as the situation whereby the actual progress of construction is slower than the planned schedule. Delay in constructing a project can be divided into three groups, excusable which are compensable and non-compensable (force majeure) second is non-excusable delays, and the last is concurrent delays (Bramble B.B, Callahan M T, 2000).

In Ethiopia according to the ministry of finance and economic development (2014) report, the construction sector became the second-largest job creator next to agriculture. The Ethiopian construction sector has shown remarkable growth and is given high prominence (MoFED, 2014). The fast growth of the construction industry increased the number of contractors joining the industry. However, several defects are being noted in the sector that needs immediate action.

As non-compensable type of delay (force majeure event) like COVID-19 spreads across the world, construction projects increasingly experience the impact caused by the pandemic and the related measures that have been imposed by governments and authorities in different countries. These pandemic impacts are also seen in ongoing construction projects of public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower buildings located in Addis Ababa Ethiopia piassa area. The aim of this study is to fill an important knowledge gap by identifying the various attributes for construction project delay. The main impact of the COVID-19 pandemic on this ongoing construction project is Time overrun, cost overrun, and dispute. The impacts continue to unfold the researcher recommend key several actions to take properly evaluate and plan for force majeure event as review contract, identify specific impacts, formulate a plan and communicate to inform throughout the life cycle of the specific construction project for better delivery.

1.3 RESEARCH QUESTIONS

The study is going to be guided by the following research questions

1. What are the delaying factors corona virus (COVID-19) pandemic causes?
2. What is the impact corona virus (COVID-19) creates on the construction site of PSSSA?
3. What methods and tools are used to manage the construction delays on PSSSA construction sites?

1.4 RESEARCH OBJECTIVE

1.4.1 General objective

The overall aim of the study is to assess the delaying factors in construction projects of (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower buildings during COVID-19, the impact caused by the pandemic and to describe knowledge areas practiced as the assistance of managing the delay.

1.4.2 Specific Objectives

Specifically the study tries to address the following key research objectives:

- To Assess delaying factors in construction projects during corona virus pandemic specific site of (PSSSA)
- To assess the impact caused by the pandemic corona virus in the construction site of (PSSSA)
- To describe knowledge areas practiced to reduce the gap created by the force majeure delaying factor as corona virus pandemic.

1.5 SIGNIFICANCE OF THE STUDY

The major contributions or significance of this research are:

1. The assessment of delay factors in construction projects due to the pandemic (COVID-19) research can be used as benchmark information in prioritizing and designing improvement action.

2. The study may help in providing a clear perspective of the current state of the pandemic in delay, health, economic, and productivity-wise and defines the future state.
3. It can serve as a guide in implementing and designing improvement efforts.
4. It has identified the gap in the existing construction delay during the pandemic (COVID-19) for future refinements of force majeure gaps.

1.6 SCOPE OF THE STUDY

The extent to which the research area will be explored is the assessment of delay factors in construction industries during the covid-19 pandemic period in the case of the public servant's social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building project located in Ethiopia, Addis Ababa during corona (COVID-19) pandemic

1.7 LIMITATION OF THE STUDY

1. The study is limited to the lack of actual data from the real project to stimulate the exact impact of the corona virus pandemic.
2. The study is limited to previously recorded data and research about the construction delay of the selected site.
3. The study is limited to get both primary and secondary data, the major reason for this to happen was COVID-19, the current global pandemic and especially getting primary data through interview was difficult. Even though some organizations were willing to answer the questionnaires, some of the respondents didn't address all the questions listed on the questionnaires properly.
4. There study was limited to previously made research related with the study title.

1.8 ORGANIZATION OF THE PAPER

The study is presented in five Chapters. Chapter one presents the introduction of the study, statement of the problem, objectives of the study, significance, scope and limitations of the study. Chapter two is dedicated to review of related theoretical and empirical literature, where various literatures relevant to the study are dealt with adequate depth ad in addition it has the research gaps and development of conceptual frame work. Chapter three focuses on the research methodology and provides explanations for the data collection techniques and analytic methods used in the study. The fourth Chapter is on the data presentation, analysis and discussion of findings. Chapter five comprises conclusions, summary of the research findings as well as recommendations. The references, questionnaire, other documents of the study are organized on the appendix.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

2.1 Theoretical Review

2.1.1 Definition of project delay

Construction is an industry that involves complex and dynamic processes. It consists of successful coordination of multiple discrete business entities such as professionals, tradesmen, manufacturers, trade unions, investors, local authorities, specialists, trade contractors and others. The construction industry is a very important sector for the development and economic growth of a nation's economy. Successful completion of construction projects leads to wealth creation; socio-economic growth and improved standards of living. Nations are evaluated as "developed", "developing" and "underdeveloped" based on the quantity and quality of completed construction projects in their domain. Delays in construction projects therefore impact on the economic projections of a nation. Assaf & Al-Hajji S, (2006).

According to Assaf & Al-Hajji S, project delay in construction industry refers to the time overrun in specified completion date or time overrun in the delivery of the construction project on which all parties agreed. It is an act or event that extends the time required to perform the tasks under a contract. It usually shows up as additional days of work or as a delayed start of an activity. Pickavance define the word "construction delay" as something happening at a later time than planned, expected, specified in a contract or beyond the date that the parties agreed upon for the delivery of a project. Lo, Fung and Tung (2006) define delay as the slowing down of work without stopping construction entirely and that can lead to time overrun either beyond the contract date or beyond the date that the parties have agreed upon for the delivery of the project

For the client, construction delay refers to the loss of revenue, lack of productivity, dependency on existing facilities, lack of rentable facilities etc. For the contractor, construction delay refers to the higher costs, longer work duration, increased labor cost, higher material and equipment costs etc. Completion of construction projects on specified time or time agreed within parties indicates the work and construction efficiency. Delay is a situation when the contractor and the

project owner jointly or severally contribute to the non-completion of the project within the agreed contract period. Delays in construction projects are frequently expensive, since there is usually a construction loan involved which charges interest, management staff dedicated to the project whose costs are time dependent, and ongoing inflation in wage and material prices. They are usually accompanied by cost overruns. These have a debilitating effect on clients, contractors, and consultants in terms of, litigation, arbitration, cash-flow problems, and a general feeling of trepidation towards each other. Aibinu AA, Jagboro GO, et al, (2002).

2.1.2 Type of delay

According to Pickavance (2005), the technical meaning of the term "delay" in construction projects has not been defined correctly since it has a different sense to different conditions during the project execution. However, the term is normally used as an extended the duration or delay in the start or finish date of a project activities. Delays therefore cause the time extension and variation in cost allocation the impact in time and cost will only occur when the delay lies on the critical path of the program. Braimah (2008) stated that delayed completion of any projects is generally caused by the actions or interactions of the project parties including the contractors, consultants, owners, or others (e.g. acts of God). Based on these sources and the contractual risk allocation for delay-causing events, Braimah has classified delays in to four categories as Critical and non-critical Excusable and non-excusable

Critical and non-critical delays

Delays that result in extended project completion times are known as critical delays, (Callahan et al, 1992). In the case of excusable critical delays, the contractor will generally be entitled to a time extension. Changing the type of structural steel members while the contractor is erecting structural steel is a clear example of a critical delay that is likely to delay the contractor's overall completion of the project. However, many delays occur that do not delay the project completion date or milestone date. The concept of critical delays emanates from critical path method scheduling, and all projects, regardless of the type of schedule, have critical activities. If these activities are delayed, the project completion date or a milestone date will be delayed. In some contracts, the term controlling item of work will be used. Normally, this refers to critical activities or critical paths that if delayed will delay the completion date (Trauner& Theodore,

2009). Determining which activities truly control the project completion date depends on the following: The project itself, contractor's plan and schedule, requirement of the contract for sequence and phasing and physical constraints of the project.

Non-critical delays are delays incurred off the critical path which do not delay ultimate project performance. If the delay in this case is excusable, the contractor does not have the right to receive a time extension, because this type of delay does not have an effect on the overall completion of the project (Leary and Bramble, 1988). However, noncritical delays may affect the contractor's cost performance; in this case, the contractor may have the right to receive additional performance costs. However, delays can also be further classified into compensable or non-compensable delays (Trauner& Theodore, 2009).

Excusable and non-excusable delay

Excusable delay

All delays are either excusable or non-excusable. An excusable delay, Excusable delays are divided into two: compensable and non-compensable delays. Compensable delays are caused by the owner or the owner's agents. While non-compensable delays are caused by third parties or incidents beyond the control of both the owner and the contractor. These delays are commonly called "acts of God" because they are not the responsibility or fault of any particular party (Wa'elAlaghbari 2007; Saleh Al HadiTumi 2009). Decisions concerning delay must be made within the context of the specific contract. The contract should clearly define the factors that are considered valid delays to the project and that justify time extensions to the contract completion date (Trauner& Theodore, 2009). For example, some contracts may not allow for any time extensions caused by weather conditions, regardless of how unusual, unexpected, or severe.

Non-excusable delay

Non-excusable delays are events that are within the contractor's control or that are foreseeable. These are some examples of non-excusable delays: Late performance of subcontractors, Untimely performance by suppliers, and Faulty workmanship by the contractor or subcontractors and Labor strike. Again, the contract is the controlling document that determines if a delay would be considered non-excusable. For example, some contracts consider supplier delays

excusable if the contractor can prove that the materials were requisitioned or ordered in a timely manner, but that the material could not be delivered due to circumstances beyond the control of the contractor. Other contracts may not allow such delays. The owner and the designer or drafter of the contract specifications must be sure that the contract documents are clear and unambiguous. Similarly, before signing the contract, the contractor should fully understand what the contract defines as excusable and non-excusable delays (Trauner& Theodore, 2009)

2.1.3 Delay factors in construction projects

A large number of delay factors may lead to project delays in construction projects, arising from different parties and resources. These delay factors are countless, since each construction project has its own characteristics and environment. Efforts have therefore been made by many researchers to identify the most significant factors of delay in construction projects, which are discussed in the next section. The literature review was conducted through published books, conference proceedings, articles related to the research area and e- resources. In the next step, all the delay factors that may be encountered in a construction project were listed through a detailed review of the literature, and the possible delay factors recognized in practice were identified. These delay factors were grouped into four major categories as follows: Contractor-related factors, Consultant-related factors, Owner-related factors and others (Shi &Arditi, 2001).

Delay factors related to contractor

Among all the construction parties, a contractor has the major responsibility to carry out most of the project activities. Similarly, if the project is not finished on time and within the allocated budget then the contractors is blamed. In reality, the contracting business is a challenging and demanding profession that contains many complex activities, and, to avoid project delays, the main contractor often holds full responsibility for the work of sub-contractors as well as his own. Basically, how the contractor deals with particular situations depends on the nature of the work and the type of contract (Shi &Arditi, 2001).

The capability of the contractor to finish the project according to the planned schedule mainly depends on two things: availability of resources (incorporating money, manpower, materials, and equipment and machinery) and managerial competence. There are two types of sources from which the contractor hires manpower: sub-contract and direct hire. If the sub-contractor causes

delay to the construction project then both the owner and the main contractor have the responsibility to look for a solution to the problem. Therefore, it is essential for the contractor to constantly supervise the work performance of sub-contractors in order to maintain a balance between construction activities (Abdul-Kadir& Price, 1995). On the basis of the literature review, nine contractor-related delay factors were identified in Table 2.1, but there are many other factors that may lead to project delays, and that can be broadly classified into four categories as follows: Materials, Equipment, Manpower and Project management performance.

Table 2-1 Factors of delay related to contractor

Factors for contractor- related delays	Inadequate contractor experience
	Inappropriate construction methods
	Inaccurate time estimates
	Material cost increment
	Freight and potential shipping delays
	Poor site management and supervision
	Improper project planning and scheduling
	Incompetent project team
	Unreliable subcontractor
	Government related inconvenience

Source, Abdul-Kadir& Price, 1995

Consultant-related delay factors

The client may consult with other professionals who can assist him in organizing the entire construction project. These professionals are called consultants. The main duties and responsibilities of a consultant may be to design the infrastructure of the project, which includes architectural, mechanical, structural, and electrical designs. Some other responsibilities may include the preparation of project related documents such as bills, drawings, specifications, and tender documents (Long et al, 2004). Furthermore, in some cases, consultants also conduct project planning, cost control and estimation, and quality control.

In normal circumstances, consultant-related delays occur during preparation of drawings, during the adoption of design drawings, while taking design approvals from contractors and client, and

when performing inspection procedures. There are many possible reasons behind these types of delays; prominent factors include inexperienced consultancy staff, poor qualifications, inadequate communication and coordination skills, and improper planning (Gunlana&Krit, 1996). Odeh&Battaineh (2002) believe that during the construction processes, the enquiries and inspections of the consultant may slow down the progress of the work. In response, the contractor may come up with solutions to the problems; however, these solutions may not satisfy the consultant, and could result in the work having to be redone. Effective control and command over production on the construction site is a major element that contributes to the success of implementing the project; conversely, hindrances in performing these activities can have severe impacts on a construction project. Table below shows the nine consultant-related factors that can result in construction delays.

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impacts on a construction project. Table below shows the nine consultant-related factors that can result in construction delays.

Table 2-2 Factors of delay related to consultant

	Poor contract management
	Delay in the preparation of drawings
	Delay in the approval of contractor submissions by the consultant
	Poor communication between the consultant engineer and other parties involved
	Poor planning and coordination by the consultant engineer with other parties involved
	Delays in performing inspection and testing by the consultant engineer
	Slow response from the consultant engineer to contractor inquiries
	Inadequate design specifications
	Poor qualification of consultant engineer's staff assigned to the project
	Shipment delays
	Material price differences

Source, Odeh&Battaineh, 2002

Owner-related delay factors

The owner or client is the key participant during the entire construction process. Kwakye (1998) mentioned that the owner's duties and responsibilities are onerous, and that he or she needs other knowledgeable parties to manage or organize the construction project. In a few cases, owners have in-house project management teams that participate in the construction process, but most of the time, owners hire a project manager and external parties to handle the project (Odeh&Battaineh, 2002).

One of the most crucial decisions that owners need to take at the beginning of the project is to determine the duration of the contract. Many owners prefer fast completion of work but thorough investigations should be conducted to decide the contract duration. Another major factor that delays the initialization of the project is the owner's failure to hand over the site to the contractor. Therefore, the personal involvement and quick decision-making on various matters by the owner in the initial phases of the project may accelerate the project's progress. Kimmons&Loweree (1989) observed that "the working relationship between an owner and a

contractor is one of the most crucial determinants of project success and this relationship also develops trust between the two parties". The owner must participate in the construction project horizontally and vertically, but without interrupting the contractor's project plan. In addition, financial matters should also be taken into account, and the owner must ensure the on-time availability of funds; lack of financial stability may cause many problems, such as extensive delays due to labour strikes or material mismanagement (Chan &Kumaraswamy, 1997).

Table 2-3 Factors of delays related to owner

	Delay in furnishing and delivering the site to the contractor
	Unrealistic contract duration
	Delay in the settlement of contractor claims by the owner
	Suspension of work by the owner's organization
	Delay in issuing of change orders by the owner
	Slow decision-making by the owner's organization
	Interference by the owner in the construction operations
	Uncooperative owner with the contractor complicating contract administration
	Delay in progress payments by the owner
	Owner's poor communication with the construction parties and government authorities

External factors

Some factors are outside the control of construction participants. For instance, the weather conditions in Libya in the summer are very hot, and the temperature normally exceeds 40 degrees Celsius. On the other hand, the weather conditions in the United Kingdom are worst in the winter season, when the temperature can typically fall to -5 or - 8. In such intense conditions, contractors may face many difficulties that normally result in either slowdown of the construction process or, sometimes, a complete stoppage of works. These difficulties may include disruption to utility lines such as gas, electricity or water. Ogunlana&Krit (1996) mentioned that social and cultural festivals and celebrations may also affect the time it takes labour to reach the job site, negatively affecting the productivity of the construction project and

potentially resulting in minor delays. As discussed earlier, increases in the prices of raw materials can also have a significant impact on a construction project, yet is a factor also beyond the control of the owner and contractor. This is evidenced by the recent case in Libya, when many projects were stopped due to the prices of steel doubling in 2011. These external factors may also create clashes or disputes between the construction participants, which will further increase the product cost and duration (Odeh&Battaineh, 2002). Eight external- related factors are included in Table below.

Table 2-4 Factors of delays related to external factors

	Unforeseen ground conditions
	Unexpected geological conditions
	Problems with neighbors
	Unusually severe weather
	Conflict, war, and public enemy
	Poor weather conditions on the job site
	Traffic control and restrictions on the job site

Source, Odeh&Battaineh, 2002

Example for excusable delay Corona Virus Pandemic COVID-19

The corona virus disease is also known as COVID-19 is caused by the virus named severe acute respiratory syndrome corona virus (i.e., SARS-CoV-2). The virus is confirmed as being transmitted from human to human and results in symptoms including fever, dry cough, fatigue, and shortness of breath. Since the first cases were reported by the World Health Organization (WHO) on 31 December 2019, the virus has spread to over 200 nations. The WHO declared the crisis as first being a public health emergency of international concern on 30 January 2020. Later, the crisis was declared as being a global health pandemic on 11 March 2020, (Yi-Chi et al, 2020). According to the national bureau of economic research (NBER, March 2020) given the rapid spread of the virus in many countries the COVID-19 pandemic has been the largest global health crisis in decades. Apart from the unprecedented number of deaths and hospitalizations, the pandemic has resulted in economic slowdowns, widespread business disruptions, and significant hardships all over the world like the other industries; the construction industry has been also

impacted by the pandemic in several ways, national bureau of economic research (NBER, Marc 2020).

2.1.4 Causes and effects of project delay

Below list causes of construction project delays are identified from the literature and categorized for investigation in this study as follows

Table 2-4 Causes and effects of project delays

Client related delay	Description
Construction Material shortages	This results in slowed activities and sometimes temporary abandonment of sites.
Impractical allocation of resources	Funds, manpower, materials, equipment are inadequate to complete the project because project owners or clients have not properly assessed whether they have the required resources to complete projects
Poor quality materials supply	Poor quality materials lead to poor quality workmanship, thus an unacceptable product. Most often, the project owners insist that correction be made or that parts of work be completely scrap and rework
Lack of adequate communication between the parties	Poor or inadequate communication between parties leads to misunderstanding and misrepresentation of facts. This could breed conflicts and consequently hinders smooth progress of activities
Unrealistic contract duration	This could be caused by wrong packaging of the contract document, unprofessional/inexperienced client's staff. Where the stated completion duration is impracticable, the responsibility lies on the

	stakeholders to review the initial expected completion time and make amendments where necessary
Slow decision making	Clients are the project Owners. When they do not make decisions on time regarding project matters, they slow down activities at the project sites. Slow decision making could be caused by an organization's internal bureaucracy or wrong channels of communication
Contractor related factors	Description
Inadequate planning	Contractors appoint Project Managers who are expected to draw up workable project plans and modalities for their implementation. A faulty plan will lead to delay in project completion. Most Local Contractors rarely have practicable work programs at the initial stage of project planning. Lack of appropriate work programs impairs monitoring of project progress against the stipulated time.
Inadequate experience	A contractor who does not possess requisite experience usually makes construction errors. These errors lead to rework and delays in activities.
Mistakes during construction stage	Inexperienced contractors usually make errors during construction. Sometimes contractors employ low skilled staff in order to make more profit by paying them lower salaries. Tendencies of errors are, thus, higher. Rework of an already executed aspect of a scope slows

	down project progress. This has serious impact if it involves execution of critical tasks.
Incompetent site management	Contractor's employees that are not skilled in project management are not able to manage their project site appropriately, thus, culminating in faulty work, reworks and delay in completion of tasks
Unskilled site manpower	Employment of unskilled personnel at the project sites impedes execution of work to specification and leads to error or mistakes P a g e | 32 during construction. Time is then spent on alterations and corrections
Consultant-related factors	Description
Inappropriate design	Improper design stalls project execution because of the time it takes for such design to be reviewed, amended and accepted for construction works. When errors are observed in the design, works are temporary suspended until such errors are removed. This is predominant in organization"s where selection processes of vendors are compromised
Late identification & resolution of drawings & specification errors &omissions	Projects are required to be completed on schedule, within budget and according to specification. If consultants do not identify errors and omissions in the working drawings early enough, already completed activities may require alterations when such errors and omissions are discovered after project commencement
Poor contract management	Most projects have consultants as the contract managers. They liaise between the client and

	the contractor. Projects get delayed when the required management principles are not utilized during projects' execution
Late preparation of drawings and other contract documents	Drawings and other contract documents such as Bill of Engineering Measurement and Evaluation Therefore, delay in their release stalls project activities
Inappropriate coordination of information	If projects issues or contractor"s requests are not addressed sensible and information is not effectively managed, project activities can be negatively affected. There must be a good communication management plan in place so that site information is properly channeled and coordinated. Lack of coordination of information fosters misunderstanding, potentially causing conflicts that require resolution time

Source, Odeh&Battaineh, 2002

2.2 Empirical Review

The following empirical literature contains researches relevant to this study title the studies done to review the delay factors in construction projects during COVID-19 pandemic. However, since the pandemic COVID-19 and its effect is not a resolved matter not much has been done in the research area.

2.2.1 Early Impacts of the COVID-19 Pandemic on the United States Construction Industry

Alsharef, A. (2021), conducted research on Early Impacts of the COVID-19 Pandemic on the United States Construction Industry. The research objectives were achieved through 34 telephone interviews with project managers, engineers, designers, and superintendents that represented different states and distinct industry sectors in the United States (U.S.). The

interviewees offered information on their experience with the pandemic, including the general and adverse effects experienced, new opportunities created, and management efforts being undertaken. The COVID-19 pandemic has resulted in substantial disruptions and hardships across nations and industries like other industries such as airlines, retail, and restaurants; the construction industry has also been impacted in several ways. Through interviews with SMEs, the current article focused on cataloging the early impacts of the pandemic as reported by construction stakeholders. The study findings identified that the construction industry experienced several adverse effects. These included material delivery delays, shortage of material, permitting delays, lower productivity rates, cash flow-related challenges, project suspension, price escalations, and potential conflicts and disputes.

The research effort also unveiled specific efforts that were adopted to manage the challenge of the COVID-19 pandemic in construction workplaces. These included safety measures such as requiring workers to wear face coverings, implementing social distancing guidelines, adopting COVID-19-related safety training, and encouraging work-from-home initiatives. Other risk management measures to combat the effects of the pandemic included establishing a task force that is tasked with offering COVID-19-related guidelines, proactive steps to reduce the risk of delays, advocacy efforts seeking to establish construction operations as being essential, and leveraging governmental relief programs to preserve businesses and the workforce. The presented research offers an understanding of the impacts of the COVID-19 pandemic on the construction industry. They concluded the findings of the effort will be useful to governmental agencies as they seek to elevate the adverse effects experienced in the construction industry. Industry representatives may use the findings to identify risk management efforts that may be appropriate for their organizations. Researchers may use the findings to identify problem areas and propose relevant interventions to support the efforts of the industry.

2.2.2 COVID-19 Causes Of Delays On Construction Projects In Kuwait

Thamer A N. Alenezi, (2020) conducted a research entitled the major causes of delays on construction projects in Kuwait during COVID-19. The major causes of delays from this research study were investigated following data collection carried out through a questionnaire survey with a wide range of construction professionals based in Kuwait a questionnaire survey of

many delay factors collected from literature review and the information from participants was gathered using the Likert Scale based on a 5 point scale with values from 1 to 5, where 1, 2, 3, 4 and 5 represent a response of very low, low, moderate, high and very high, respectively. The responses were from 16 engineers, 8 architects, 5 surveyors, 4 construction management, and 2 coordinators. The analysis made based on the rank from the Likert scale and other open end questions response of the targeted population. Thamer A N. Alenezi, (2020) concludes with the highlights the need for proper planning, monitoring and evaluation from the very early stages also the importance of communication throughout the project, and the need to keep everyone informed of serious problems as they arise, such as shortages, and changes affecting the construction

2.3 RESEARCH GAP

The literature was reviewed with respect to the objective of the study that is to assess the delaying factors in construction projects during corona virus pandemic (COVID-19), the impact caused by the pandemic and to describe knowledge areas practiced to reduce the gap created by the force majeure delaying factor with the aim of assistance of managing the delay on the selected site.

As from the reviewed literatures the possible impact of COVID-19 on construction projects may range and vary from country to country, project to project and contract to contract range from delay to disruption and termination. The reviewed literature fortifies the importance and urgency of the proposed research topic since COVID-19 has and will continue to have a profound effect on the development and construction industries. Their findings were related to the pandemic conduct some of the shared construction delay reasons caused by COVID-19 pandemic are disruption of global supply chains, restriction on import and export of goods and service.

Although the researchers have been conducted of the project ideas, their findings and conclusions don't articulate all about the proposed research idea in different ways. Some of the additional impacts of COVID19 pandemic on Construction delay of the public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building also include significant change in scope, late approval of specification, material, working drawings and unit

rate variations, timely completion, on budget completion, cost increment, reduction of workers to minimize risk of congestion, productivity loss disruptions with transport and logistics ,foreign currency rate and supply chain disruption since most of the construction materials were imported from china.

The literatures mostly contemplate on the dependent and independent impact of COVID-19on construction delays. however this study also include the construction delaying factors specifically on the selected site , which involved parties are this delays more affecting the study concludes with the recommendations of To drop off the impact of corona virus (COVID-19) pandemic that projects are implemented successfully to create the needed job opportunities, provide the needed health, educational and economic infrastructure, satisfaction of stakeholders, value for money, achieve project quality, budget, and schedule.

2.4 Conceptual Literature Review

Conceptual frameworks, according to Kothari (2008), are structured from a set of broad ideas and theories that help a researcher to properly identify the problem they are looking at, frame their questions and find suitable literature. Most academic research uses a conceptual framework at the outset because it helps the researcher to clarify the research questions and aims. Based on literature review I came up with the following conceptual framework as below

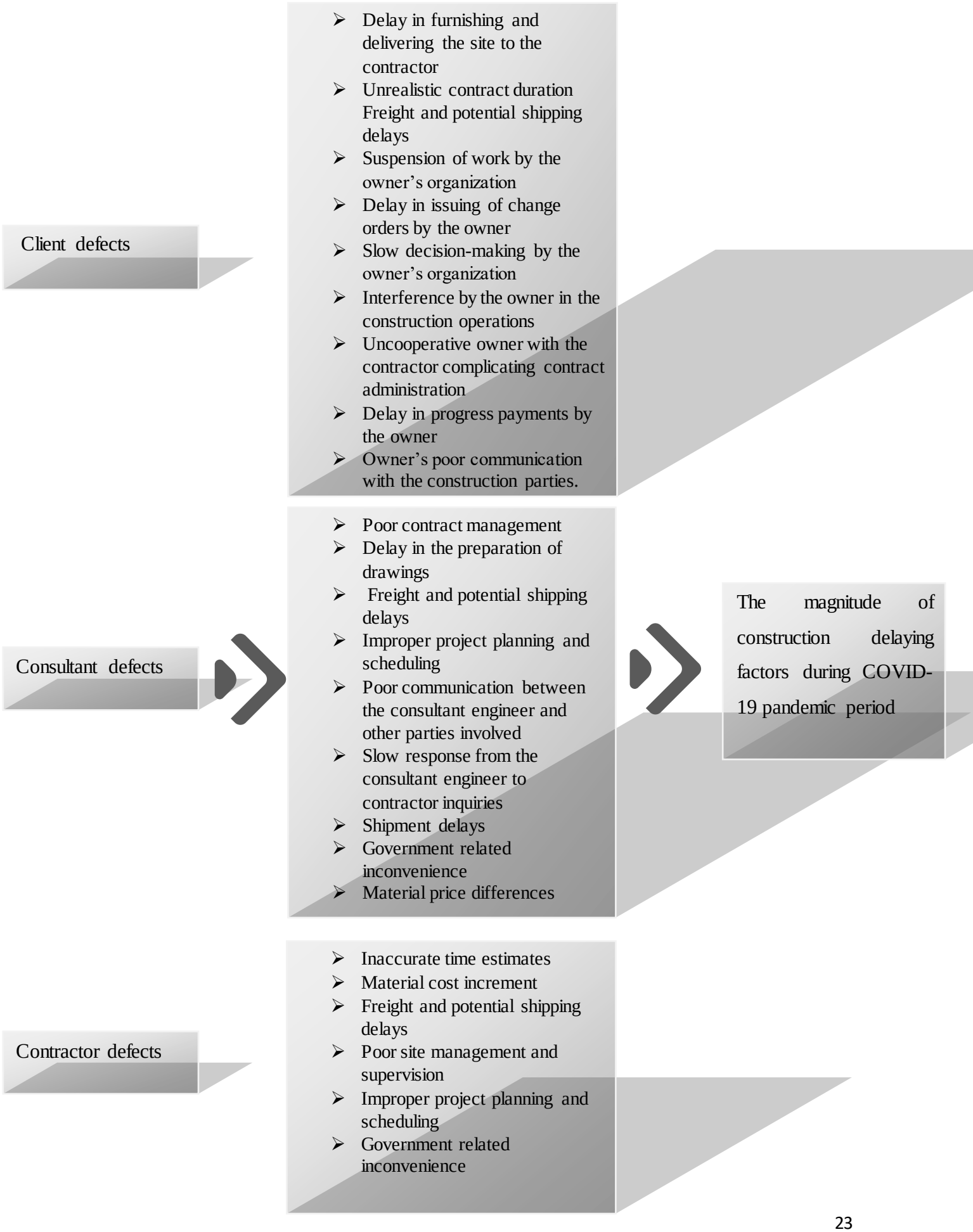

Figure1.Conceptual framework adopted from literature review of construction delays duringCOVID-19

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Research Approach and Design

Research design refers to the arrangement of collecting and analyzing data in manner that aims to combine relevance to the research purpose with the economy in the procedure (Babbie, 2007).The purpose of this study was particularly intended to assess the delay factors in construction industries during the covid-19 pandemic period in the case of public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building. For this objective descriptive survey design was adopted with a view to provide descriptions with regard to the causes of the project delay. The research has both qualitative and quantitative research types with the aim to identify, characteristics frequency and categories of delay factors in the construction projects due to corona virus (COVID-19) and to investigate the independent variables to observe and measure their effects on the client, contactor and consultant of the project participants.

3.2 Data Type

For the completion of this study, both primary and secondary types of data are used. The primary data for this research is acquired from relevant population from employees working in public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building projects of the three c's (client, consultant and contactor). The secondary data was used (referred) from project file or recorded documents of the client (PSSSA) side.

3.3 Data Sources

3.3.1 Primary data sources

The primary data was collected from key informant interview and questionnaires of project manager, coordinator director senior project engineers, project architects, and procurement specials regard of how pandemic COVID-19 affect the submission of the construction project of public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building. The professional employees of the under-construction project chosen to fill the

questionnaire that has both open ended and close ended questions and key informant interviews. That will help to receive an unbiased and more accurate response on the assessing the delay factors in construction projects due to COVID19 practices which help as the starting benchmark to measure the performance of the under-construction project.

3.3.2Secondary data sources

As the research title pandemic COVID-19 is an ongoing research topic different types of secondary data gathered from academic sources provides an expert opinion on the topic of delays, whilst primary data provides an insight into contemporary construction (Biggam 2015). To strengthen the reliability of research data and supplement the information about the selected site (PSSSA) (4B+G+M+19 and two 4B+G+M+16) previously made documents, office working documents, quarter and annual performance reports, and desk reports on subject matter.

3.4 Sampling Size And Sampling Design

3.4.1 Sampling design

The study sampling design conducted through Purposive sampling, which is one of Non-probability sampling techniques, the sampling technique collect qualitative data thorough interview and structured questionnaires with open, close and Likert based technique to get relevant professional information regarding the study objective. According to Kitchenham (2002) population represents the group or the individuals to whom the survey applies, the target population for this research decided to study the whole population that is project professionals involved in the construction project of public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building projects (client), China Jiangxhi (contactor) and Yohannes Abay architects and engineers P.L.C (consultant) specifically for project managers, directors, project architects, senior project engineers, procurement specialist, finance department and senior-level workers amid objective of obtaining accurate and reliable information. The sample size for the study is equal to the study population size total study population that is 106 project employees from the three c's sides (contractor, consultant and client).

3.4.2 Sampling size determination

The target population for this study is professionals involved in the construction project of public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16)tower building projects (client), China Jiangxi (contactor) and YohannesAbay architects and engineers P.L.C (consultant) and staffs of the organization that works on the project under each section. These respondents are selected for the purpose to indicate a premise of the subject area of the research and level of proficiency.

The population number questioners and quarterly done interviews conducted listed as shown below.

Table 3-1 List of participated organizations on the study

No.	SECTIONS NAME	Number of target population/questioner distributed	number of questionnaires complete & return	Percentage of number of responses
1	General contractor (China Jiangxhi)	57	46	80%
2	Client (public servants social security agency,PSSSA)	34	26	76%
3	Consultant (YohannesAbay architects and engineers P.L.C)	15	11	73%
	Total	106	83	78%

3.5 Data Collection Methods and Tools

The research is conducted data from both primary and secondary data collection methods. The primary data collected from key informant interviews and questionnaires of selected professionals of PSSSA construction projects. The secondary data was also collected from previously made documents, desk reports, and the internet on the subject matter of the study.

3.6 Data Analysis and Presentation

The analysis of data is the process where one is trying to gather and present the data in such a way so it has a good structure and becomes easy to understand (Artit, 2012). The analysis was anchored to the statement of the problem, research objective, and research questions. The questionnaire used for this research was composed of close-ended questions with Likert scale and open-ended questions for qualitative analysis purposes this questionnaire was distributed to the target population and logged to the software called SPSS (statistical package for social science) version 25. Then the researcher analyzed the data by descriptive analysis for demographic factors and to check the relation between the independent and dependent variables. To do so different statistical tools like Relative Importance Index (RII)., mean and standard divisions were used.

The data analysis was determined to establish the relative importance of the various factors that contribute to causes of project implementation delays and effects of project implementation delays.

There are consists of 2 steps to analyzing the data:

a) Calculating the Relative Importance index (RII)

b) Ranking of factors in each category based on the Relative Importance Index (RII).

Calculation of Relative Importance Index (RII) Kometa et al. (2008), Aibinu & Jagboro(2002) and Faridah Binti Hasbullah (2014) used the relative importance index (RII) method in their research. The same method was adopted in this study for analysis of objective 1 and objective2

within various groups (client, consultants, contractors and overall). The five point scale ranged from 1(very low) to 5 (very high) was transformed to relative importance index (RII) foreach factor as follows: RII =ΣW / (A*N)

Where Wi is the weighting given to each delay factor, A is the highest weight (5 in this case), and Nis the total number of respondents. The RII value had a range from 0 to 1, where the higher the value of RII, the more important was the cause or delays (Sambasivan & Soon 2007). The same ranking approach is employed for effects of delays. The RII value is range from 0 to 1 which the higher the value of RII, the more important was the cause and effect of delays. The RII was used to rank the different causes. The RII is then being classified based on the RII classification table as shows in Table 1.The discussion will be made when the RII was classified as most preferred causes and effects of delay only.

Table 3-2 Classification of RII

scale	Level of Preference	RII
1	Not preferred at all	$0.0 \leq RII \leq 0.2$
2	Slightly preferred	$0.2 < RII \leq 0.4$
3	Moderately preferred	$0.4 < RII \leq 0.6$
4	Preferred	$0.6 < RII \leq 0.8$
5	Most Preferred	$0.6 < RII \leq 0.8$

3.7 Validity

According to Creswell (2014), validity is one of the strengths of qualitative research and is based on determining whether the findings are accurate from the standpoint of the researcher, the participant, or the readers of an account. Terms abound in the qualitative literature that addresses validity, such as trustworthiness, authenticity, and credibility. Validity is concerned with whether the research is believable and true and whether it is evaluating what it is supposed to evaluate. In this research, the validity was assured by collecting the data from different sources i.e.directors, project managers, project directors, project architects, project engineers, finance departments,

procurement specialists working in the organizations. Validity was also ensured by making sure the sampling techniques were free from bias by giving each subject an equal opportunity to score and it is also improved through operationalization of variables. The questionnaires were comprehensive to cover all the variables being measured. A comparison was done between the conceptual framework (own variables) and theoretical framework (what has been said by others) for validation.

3.8 Reliability

As stated by Mohamed (2013) one of the main requirements of any research process is the reliability of the data and findings. In the main, reliability deals with the consistency, precision, repeatability dependability and reliability of the results obtained from a piece of research. To measure the reliability of the data collection instruments an internal consistency technique Cronbach's alpha was computed using SPSS version 25. The conducted study questionnaires from project staffs project managers, directors, project architects, senior project engineers, procurement specialist, and finance department involved in the construction work of public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building projects. According to Zinbarg, (2005) Cronbach's alpha is a coefficient of reliability that gives an unbiased estimate of data generalizability. The reliability coefficient of 0.7 and above is recommended. Reliability analysis through SPSS yielded a Cronbach alpha greater than 0.7 for the research objectives as shown on Table 3-2. This implies that the research instrument was reliable.

Table 3-3Reliability of the study

Reliability Statistics	
Cronbach's Alpha	N of Items
.812	11

3.9 Ethical Considerations

The researcher explained to the respondents the aim of the research and area in the introductory part of the questionnaire and interview. Both the interview and the questionnaires were conducted only with voluntary respondents and inform the respondents not to mention their name on the questionnaire. In addition, all information and data from individuals and the company details were disclosed to the public.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter discussed the results collected from respondents, as mentioned in the previous chapter the study has a descriptive research approach that includes both qualitative and quantitative methods. The objective of the study was to point out the time delaying factors in construction projects of public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building during the COVID-19 pandemic period, the impact caused by the pandemic and to describe knowledge areas practiced assistance of managing the delay basis in the specific construction site.

First the construction delayed factors from client, consultant and contactor side were presented for respondents from the three c sides were asked to rate the magnitude of this delaying factors during the covid-19 pandemic period. Finally, the quantitative data will be triangulated with the findings from the qualitative section of the study.

4.1 Responses Rate

To collect the primary data, a total of 106 questionnaires 57 questionnaires for the general contractor (China Jiangxi,34 for the client (public servants social security agency PSSSA) and 15 for the consultants(YohannesAbay architects and engineers P.L.C) and few key informal interviews were also conducted to steer clear of exposure of COVID-19, all the conducted primary data collections chosen from the professionals that have the purpose to indicate a premise of the subject area of the research. among the 106 questionnaires, were distributed to respondent and 83 questionnaires were collected for analysis as the above table 3-1 shows the collected questionnaire from contractor client and consultant were 53%,33%,14% respectively.

Generally, the next analysis was based on the above 78% collected data from clients, consultants and contractors in total.

4.2Respondent's Demographic information

The respondent's demographic information contains gender, age, and educational status, year of service, department and position in the company

4.2.1 Gender Information of Respondent's

According to the data collected and shown in the table 4.1 the overall composition of staffs, participated in the project from all c sides (contactor consultant and client) 67.9% of them are male and the rest 32.1% are females.

Table 4-1 Gender of respondents

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	72	67.9	67.9	67.9
	Female	34	32.1	32.1	100.0
	Total	106	100.0	100.0	

4.2.2 Age Information of Respondent's.

As the age survey analysis the majority 47(44.3%) of respondents were in the age category of 30-40, the next highest percentage34 (32.1%) were under the age category of 22-33 followed by 19(17.9 %)were under the age category of 40-50. The least percent 6 (5.7%) were age category between 50 and above.

Table4-2 Age information of respondents

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	22-30	34	32.1	32.1	32.1
	30-40	47	44.3	44.3	76.4
	40-50	19	17.9	17.9	94.3
	50 and above	6	5.7	5.7	100.0
	Total	106	100.0	100.0	

4.2.3 Educational status of Respondent's

All the respondents fall in to three educational levels which are diploma, BA/BSC and MA/MSC. Out of the 106 respondents 7 (6.6%) respondents are diploma holders, 65 (61.3%) respondents are BA/BSC holders and 34 (32.1%) respondents are MA/MSC holders. Table 4-3 describes educational background of the respondents.

Table4-3 Educational status of respondents

Educational Background					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	BA/BSc.	65	61.3	61.3	61.3
	Diploma	7	6.6	6.6	67.9
	MA/MSc.	34	32.1	32.1	100.0
	Total	106	100.0	100.0	

4.2.4 Work experience of Respondent's

The respondents were asked to fill their work experience on a project work on the questionnaire, after checking the data the researcher has grouped the work experience into four subgroups. The subgroups are 5-8 years of experience, 8-10 years of experience and, more than 10 years of experience; based on the raw data collected. Out of the 106 respondents, 39(36.8%) of them have worked 5-8 years, 32(30.2%) of them for 8-10 years, 35(33%) of them for more than years.Table 4-4 represents the work experience of the responders.

Table4-4 Work experience of respondents

Work experience					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5-8	39	36.1	36.8	36.8
	8-10	32	29.6	30.2	67.0
	more than10 years	35	32.4	33.0	100.0
	Total	106	98.1	100.0	

From the total number of respondents who participated in the study, 1 of them holds the director position, 12 (11.3%)of them were finance department workers , 14 (13.2%) of them were project Architects, 13 (12.2%) were procurement specialists, 50 (47.2%) of them were project engineers with different engineering fields and16 (15.1%)of them were support staffs working in the construction of (4B+G+M+19 and two 4B+G+M+16) tower building projects.

Table 4-5 Job positions of the respondents

Job position					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Director	1	.9	.9	.9
	Finance Department	12	11.3	11.3	12.3
	Project Architect	14	13.2	13.2	25.5
	Procurement specialist	13	12.3	12.3	37.7
	Project Engineer	50	47.2	47.2	84.9
	Project Manger	16	15.1	15.1	100.0
	Total	106	100.0	100.0	

4.2.5Organization of Respondent's

As the table 4-6 below shows a good number of the questionnaires were taken from the contractor side 52.8%, followed by the client side 33% and 14.2% of them taken from the consultant side.

Table 4-6 Organization of respondents

Organization					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Client	35	33.0	33.0	33.0
	Contractor	56	52.8	52.8	85.8
	Consultant	15	14.2	14.2	100.0
	Total	106	100.0	100.0	

Figure 4-1 organization of respondents

4.3 Data Related To the magnitude of construction delaying factors during the COVID-19 pandemic period from client contactor and consultant on the selected site of Public Servants Social Security Agency (Psssa) (4b+G+M+19 And Two 4b+G+M+16) Tower Building.

Under this section all project participants from all organization(consultant, contractor and client) were asked to rate the magnitude construction delaying factors during the covid-19 pandemic period.

4.3.1 The magnitude of construction delaying factors related to client during COVID-19 pandemic.

On the first question, respondents were asked to rate the delay in furnishing and delivering the site to the contractor 24(22.6%)respondents rated in very high extent,49(46.2%)rated high extent,33(31.1%)rated moderate extent none of the respondents rated for low and very low extents. On the second factor, respondents were asked to rate the extent of having Unrealistic contract duration 39(36.8%) respondents rated in very high extent, 12(11.3%) rated high extent,

24(22.63%) rated, moderate extent 29(27.4%) of the respondents rated for low and 1(0.9%) of respondents rated for very low extents. On the third variable were asked to rate the extent of Delay in the settlement of contractor claims by the owner, 27(25.5%) rated for very high extent, 47(44.3%) rated high extent, 9(8.5%)rated moderate extent,23(21.7%) rated low extent and none of the respondents rated for very low extent. On the fourth variable respondents were asked to rate extent of Suspension of work by the owner's organization 46(43.4%) respondents rated very high extent,59(36.8%)rated high extent,18(17%)rated moderate extent, 3(2.8%) rated low extent and none of the respondents rated very low extent. On the fifth variable respondents were asked to rate extent of Delay in issuing of change orders by the owner 43(40.6%) respondents rated very high extent, 34(32.1%)rated high extent,23(21.7%)rated moderate extent,6(5.7%) rated low extent and none of the respondents rated for very low extent. On the sixth variable respondents were asked to rate extent of Loss of workers due to illness 57(53.8%) respondents rated very high extent, 49(46.2%)rated high extent, and none of the respondents rated for moderate, low and very low extent. On the seventh variable respondents were asked to rate extent of Slow decision-making by the owner's organization 2(1.9%) respondents rated very high extent,70(66%)rated high extent,30(28.3%)rated moderate extent,2(1.9%) rated low extent and non of the respondents rated for very low extent. On the eighth variable respondents were asked to rate extent of Government related inconvenience 1(0.9%) respondents rated very high extent,43(40.6%)rated high extent,26(24.5%)rated moderate extent,35(33%) rated low extent and 1(0.9%)of the respondents rated for very low extent. On the ninth variable respondents were asked to rate extent of Interference by the owner in the construction operations none of the respondents rated very high extent, 38(35.8%) rated high extent,7(6.6%)rated moderate extent,61(57.5%) rated low extent and none of the respondents rated for very low extent. On the tenth variable respondents were asked to rate extent of Uncooperative owner with the contractor complicating contract administration none of the respondents rated very high extent, 2(1.9%) rated high extent,67(63.2%)rated moderate extent,37(34.9%) rated low extent and none of the respondents rated for very low extent. On the eleventh variable respondents were asked to rate extent of Delay in progress because of foreign trade and shipments 36(34.0%) of the respondents rated very high extent, 29(27.4%) respondents rated high extent,41(38.7%)rated moderate extent, and none of the respondents rated for low and very low extent. On the twelfth variable respondents were asked to rate extent of Owner's poor communication with the

construction parties and government authorities 48(45.3%) of the respondents rated very high extent, 30(28.3%) respondents rated high extent,28(26.4%)rated moderate extent, and none of the respondents rated for low and very low extent.

To conclude from all the answers of the respondents on the construction delaying factors related to client during covid-19 pandemic period, by looking at the relative important index value respondent has given most preferred and preferred rate for the delay caused by because of foreign trade and shipments, second material Loss of workers due to illness , Government related inconvenience, Unrealistic contract duration, Delay in issuing of change orders by the owner, Slow decision-making by the owner's organization, Suspension of work by the owner's organization, Delay in furnishing and delivering the site to the contractor, Owner's poor communication with the construction parties and government authorities, Interference by the owner in the construction operations, Uncooperative owner with the contractor complicating contract administration, Delay in the settlement of contractor claims by the owner has been rated consecutively. Table 4-7 shows the magnitude of construction delaying factors related to client during COVID-19 pandemic.

No	Statement	VHE	HE	ME	LE	VLE	Relative important index (RII)	Rank
Factors of delay related to client								
1	Delay in furnishing and delivering the site to the contractor	24	49	33	-	-	0.84107925	8
2	Unrealistic contract duration	39	12	24	29	1	0.86566038	4
3	Delay in the settlement of contractor claims by the owner	27	47	9	-	-	0.66603774	12
4	Suspension of work by the owner's organization	46	39	18	3	-	0.84339623	7
5	Delay in issuing of change orders by the owner	43	34	23	6	-	0.85698113	5
6	Loss of workers due to illness	57	49	-	-	-	0.91886792	2
7	Slow decision-making by the owner's organization	2	70	30	2	-	0.85441509	6
8	Government related inconvenience	1	43	26	35	1	0.90509434	3
9	Interference by the owner in the construction operations	38	7	61	-	-	0.76226415	10
10	Uncooperative owner with the contractor complicating contract administration	2	67	37	-	-	0.73962264	11
11	Delay in progress because of foreign trade and shipments	36	29	41	-	-	0.92679245	1
12	Owner's poor communication with the construction parties and government authorities	48	30	28	-	-	0.83339623	9

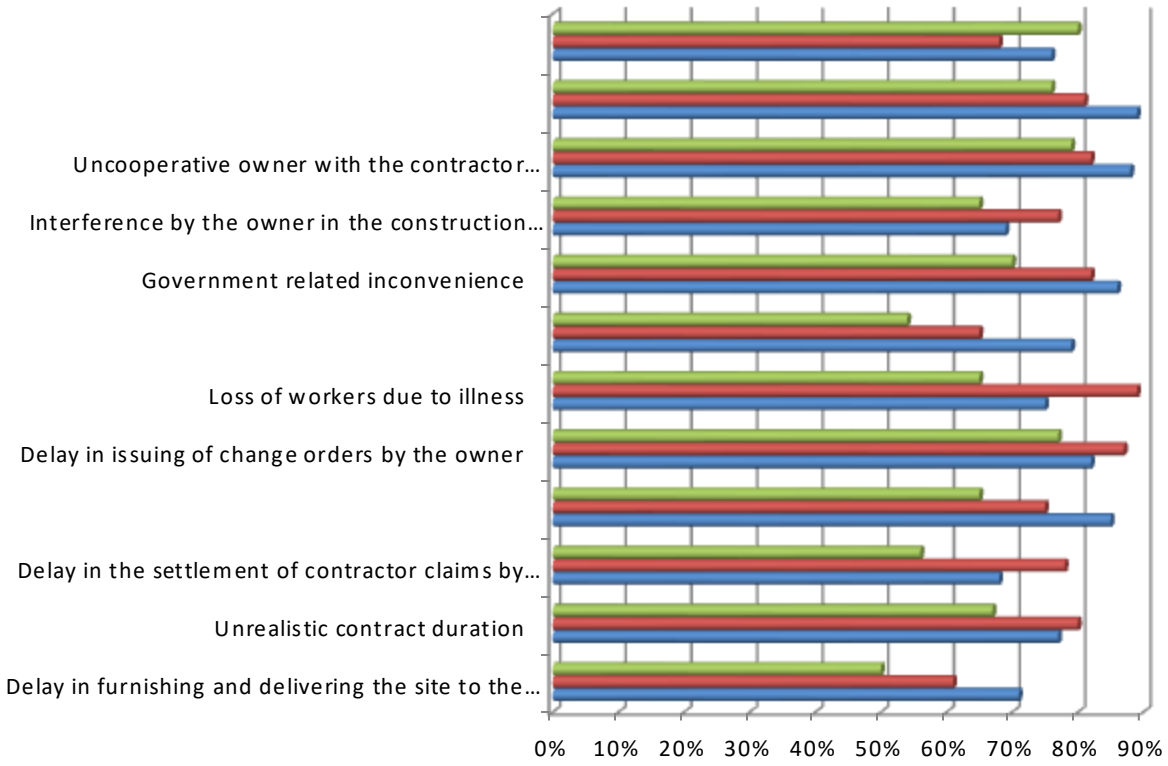

Figure 4-2 most common factors of client related delays

4.3.2 The magnitude of construction delaying factors related to contractor during COVID-19 pandemic.

On the first question, respondents were asked to rate the delay factor of Inadequate contractor experience none of the respondents rated in very high extent, 58(54.7%) rated high extent, 48(45.3%) rated moderate extent none of the respondents rated for low and very low extents. On the second factor, respondents were asked to rate the extent of having Inappropriate construction method none of the respondents rated for very high and high extent, 55(51.3%) respondents rated moderate extent 50(47.2%) of the respondents rated for low and 1(0.9%) of respondents rated for very low extents. On the third variable were asked to rate the extent of Inaccurate times estimates, 57(52.2 %) rated for very high extent, 49(46.3%) rated high extent, none of the respondents rated for moderate extent, low extent and very low extent. On the fourth variable respondents were asked to rate extent of Material cost increment 52(50.9%) respondents rated very high extent,49(46.3%)rated high extent,5(4.2%)rated moderate extent, and none of the

respondents rated for low and very low extent. On the fifth variable respondents were asked to rate extent of Freight and potential shipping delays 55(50.6%) respondents rated very high extent, 51(49.1%)rated high extent and none of the respondents rated for moderate, low and very low extent. On the sixth variable respondents were asked to rate extent of Poor site management and supervision none of the respondents rated for very high and high extent, 55(50.6%) respondents rated for moderate extent, 40(38.2%) rated for low extent and 11(9.2%) rated very low extent. On the seventh variable respondents were asked to rate extent of Improper project planning and scheduling 1(0.9%) respondents rated very high extent,43(41.3%) rated high extent,26(24.3%)rated moderate extent,35(32.9%) rated low extent and 1(0.9%) rated for very low extent. On the eighth variable respondents were asked to rate extent of Incompetent project team none of the respondents rated for very high and high extent 38(36.8%) rated moderate extent, 7(6.7%) rated low extent and 61(58%) of the respondents rated for very low extent. On the ninth variable respondents were asked to rate extent of Unreliable subcontractor none of the respondents rated very high extent and high extent,2(1.8%)rated moderate extent,67(65.5%) rated low extent and 37(34.9%) rated for very low extent. On the tenth variable respondents were asked to rate extent of Government related inconvenience 37(34.9%) of the respondents rated very high extent, 27(25.5%) rated high extent, 42(41.2%) rated moderate extent, and none of the respondents rated for low extent and very low extent..

To finalize from all the answers of the respondents on the construction delaying factors related to contractor during covid-19 pandemic period, by looking at the relative important index value respondent has given most preferred and preferred rate for the delay caused by Inaccurate times estimates, Freight and potential shipping delays, Improper project planning and scheduling, Material cost increment, Government related inconvenience, Poor site management and supervision, Inappropriate construction method, Incompetent project team, Inadequate contractor experience and Unreliable subcontractor were rated consecutively. Table 4-8 shows the magnitude of construction delaying factors related to contractor during COVID-19 pandemic.

No	Statement	VHE	HE	ME	LE	VLE	Relative important index (RII)	Rank
Factors of delay related to contractor								
1	Inadequate contractor experience	-	-	58	48	-	0.41830189	9
2	Inappropriate construction method	-	-	55	50	1	0.51886792	7
3	Inaccurate times estimates	57	49	-	-	-	0.91886792	1
4	Material cost increment	52	49	5	-	-	0.89433962	4
5	Freight and potential shipping delays	55	51	-	-	-	0.91509434	2
6	Poor site management and supervision			55	40	11	0.531	6
7	Improper project planning and scheduling	1	43	26	35	1	0.90609434	3
8	Incompetent project team		-	38	7	61	0.42830189	8
9	Unreliable subcontractor			2	67	37	0.33396226	10
10	Government related inconvenience	37	27	42	-	-	0.79622642	5

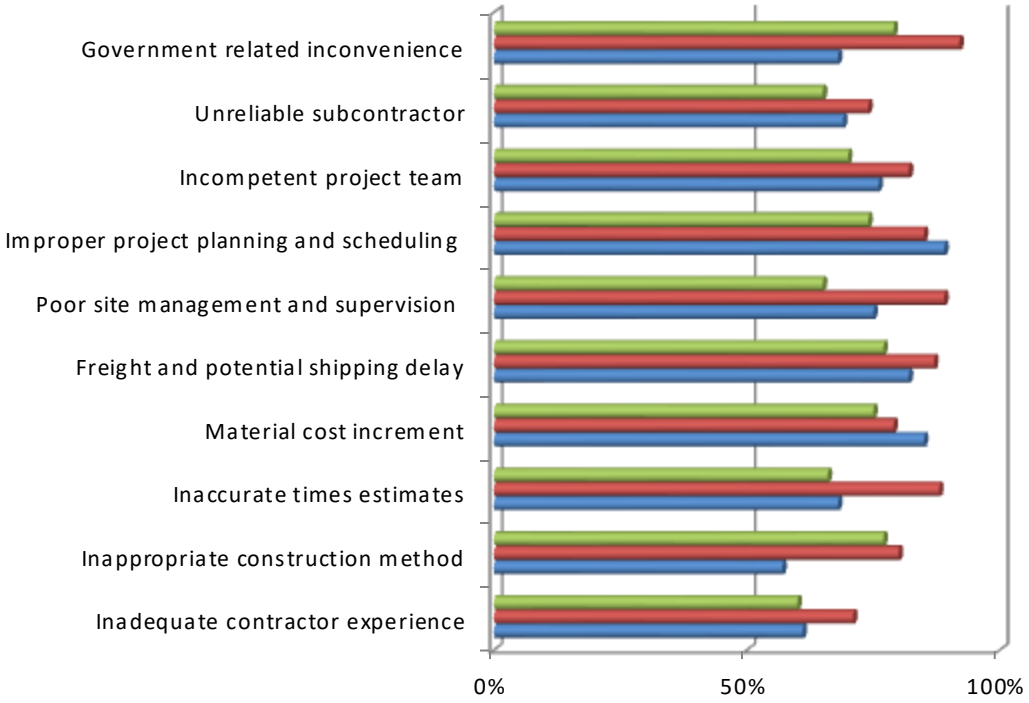

Figure 4-3most common factors of contractor related delays

4.3.3 The magnitude of construction delaying factors related to consultant during COVID-19 pandemic.

On the first question, respondents were asked to rate the delay factor of Poor contract management 35(33.9%) rated for very high extent, 41(40.2%) rated high extent, 28(27.3%) rated moderate extent, 2 (1.7%) rated for low and none of the respondents. rated very low extents. On the second factor, respondents were asked to rate the extent of Delay in the preparation of drawings 32(31.8%) rated for very high 39(37.8%) rated for high extent, 30(29.3%) respondents rated moderate extent 5(4.2%) of the respondents rated for low and none of respondents rated for very low extents. On the third variable were asked to rate the extent of Delay in the approval of contractor submissions by the consultant, 37(35.8 %) rated for very high extent, 22(21.3%) rated high extent, 45(43.9%) rated for moderate extent, 2(1.8%) rated for low extent and none of the respondents very low extent. On the fourth variable respondents were asked to rate extent of Change in scope of design 48(46.9%) respondents rated very high extent,45(44.3%)rated high extent and none of the respondents rated for low and very low extent. On the fifth variable

respondents were asked to rate extent of Poor communication between the consultant engineer and other parties involved 40(38.6%) respondents rated very high extent, 38(37.1%)rated high extent , 20(18.9%) rated for moderate extent,8(7.2%) rated for low extent and none of the respondents rated for very low extent. On the sixth variable respondents were asked to rate extent of Poor planning and coordination by the consultant engineer with other parties involved 47(45.8%) rated for very high extent,38(36.4%)rated for high extent, 21(20.6%) respondents rated for moderate extent, none of the respondents rated for low and very low extent. On the seventh variable respondents were asked to rate extent of Delays in performing inspection and testing by the consultant engineer 1(0.9%) respondents rated very high extent,25(24.1%) rated high extent,45(44.3%)rated moderate extent,34(33.9%) rated low extent and 2(1.8%) rated for very low extent. On the eighth variable respondents were asked to rate extent of Slow response from the consultant engineer to contractor inquiries 33(32.1%) rated for very high ,41(40.1%) high extent 8(6.8%) rated moderate extent, 7 none of the respondents rated for low and very low extent. On the ninth variable respondents were asked to rate extent of Poor qualification of consultant engineer's staff assigned to the project none of the respondents rated very high extent and high extent,45(44.1%)rated moderate extent,44(42.5%) rated low extent and 17(15.9%) rated for very low extent. On the tenth variable respondents were asked to rate extent of Material price differences 52(51.4%) of the respondents rated very high extent, 45(43.5%) rated high extent, 9(8.2%) rated moderate extent, and none of the respondents rated for low extent and very low extent.

To finalize from all the answers of the respondents were asked to rate the magnitude of the delaying factors related to consultant during covid 19 pandemic period, by looking at the relative important index value respondent has given most preferred and preferred rate for the delay caused by Material price differences, Change in scope of design, Poor planning and coordination by the consultant engineer with other parties involved, Poor communication between the consultant engineer and other parties involved, Poor contract management, Delay in the preparation of drawings, Delay in the approval of contractor submissions by the consultant, Slow response from the consultant engineer to contractor inquiries, Delays in performing inspection and testing by the consultant engineer and Poor qualification of consultant engineer's

staff assigned to the project were rated consecutively. Table 4-9 shows the magnitude of construction delaying factors related to consultant during COVID-19 pandemic.

No	Statement	VHE	HE	ME	LE	VLE	Relative important index (RII)	Rank
Factors of delay related to consultant								
1	Poor contract management	35	41	28	2	-	0.80754717	5
2	Delay in the preparation of drawings	32	39	30	5	-	0.78679245	6
3	Delay in the approval of contractor submissions by the consultant	37	22	45	2	-	0.77924528	7
4	Change in scope of design	48	45	13	-	-	0.87169811	2
5	Poor communication between the consultant engineer and other parties involved	40	38	20	8	-	0.81943396	4
6	Poor planning and coordination by the consultant engineer with other parties involved	47	38	21	-	-	0.85471698	3
7	Delays in performing inspection and testing by the consultant engineer	1	25	45	34	2	0.58490566	9
8	Slow response from the consultant engineer to contractor inquiries	33	41	8	-	-	0.67169811	8
9	Poor qualification of consultant engineer's staff assigned to the project	-	-	45	44	17	0.46981132	10
10	Material price differences	52	45	9	-	-	0.88679245	1

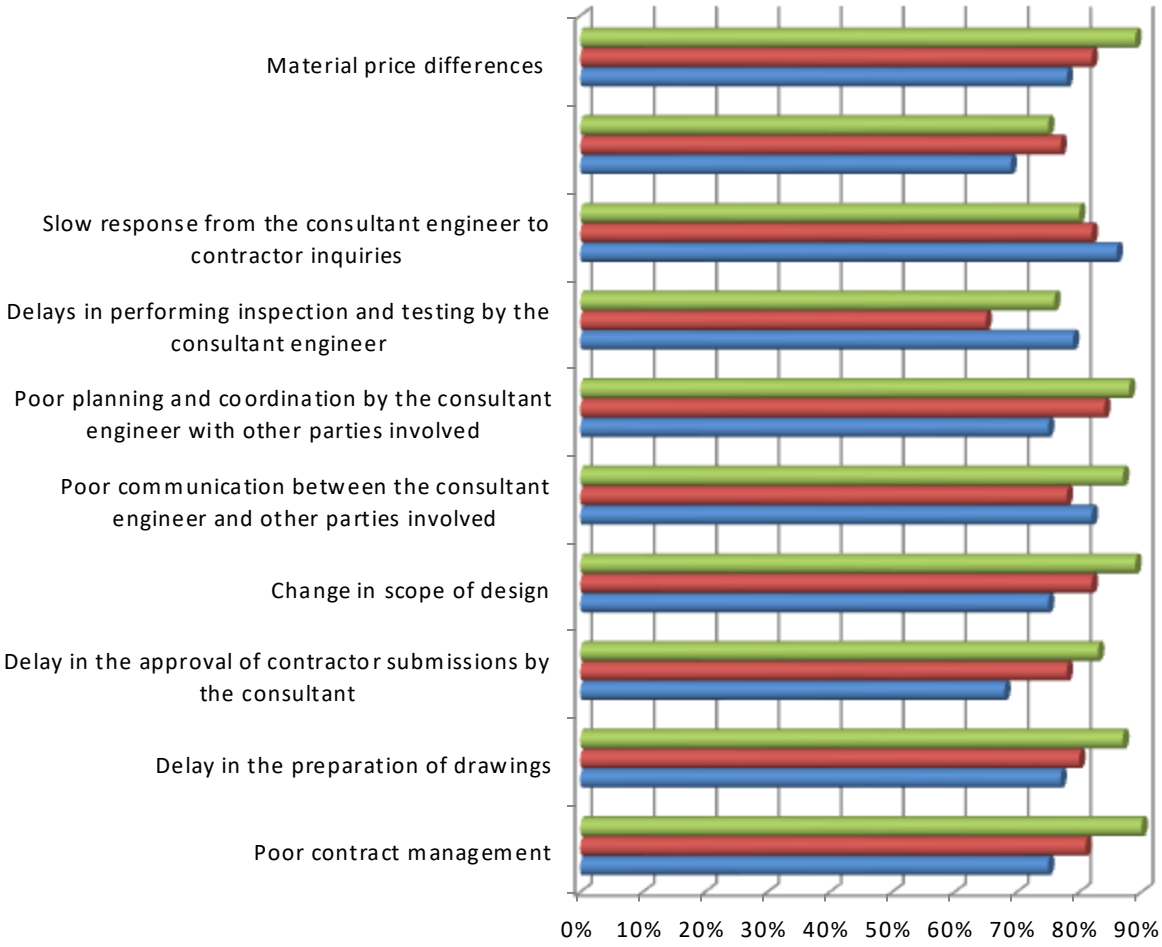

Figure 4-4 most common factors of consultant related delays

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter deals with the summary of major findings of the study and conclusions drawn from the analysis made. Furthermore, based on the findings of the study, possible recommendations are mentioned.

5.1 Summary of Findings

The main purpose of this study is to assess the magnitude of construction delaying factors in construction projects of public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building during the (COVID-19), the impact caused by the pandemic and to describe knowledge areas being practiced assistance of managing the delay.

Out of the 106 questionnaires distributed 85(80%) of them were properly filled and returned, all the rest respondents have properly filled and returned the questionnaire. According to the general demographic characteristics analysis of the respondents, 67.9% of respondents were male and 32.1% of respondents were female. The majority of the respondents are under 31-40 age group of 47(44.3%) and most of them hold BA/BSC degree 65 (61.3%). The highest number of job positions was concurred by 50 (47.2%) of them were project engineers and the highest number of the respondents have a work experience of 39(36.8%) of them work 5-8 years.

To analyze construction delaying factors during covid-19 pandemic period respondents from client, contractor and consultant were asked to rate most significant factors causing the delay to measure the magnitude of those factors during the COVID-19 pandemic period specifically in construction projects of public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) .

The paper presented the construction delaying factors from client, consultant and contactor sides of the project participants and presents the data based on the importance indices for the delaying factors. as the result shown in table 4-7 the relative important index and its ranks shows major of factors the delay related to client regards to the magnitude of COVID-19 pandemic period is Delay in progress because of foreign trade and shipments , Loss of workers due to illness ,

Government related inconvenience , Unrealistic contract duration, Delay in issuing of change orders by the owner , Slow decision-making by the owner's organization, Suspension of work by the owner's organization , Delay in furnishing and delivering the site to the contractor , Owner's poor communication with the construction parties and government authorities , Interference by the owner in the construction operations and Delay in the settlement of contractor claims by the owner were rated consecutively. Secondly as the result shown in table 4-8 the relative important index and its ranks shows major of factors the delay related to contractor regards to the magnitude of COVID-19 pandemic period is Inaccurate times estimates, Freight and potential shipping delays, Improper project planning and scheduling, Material cost increment, Government related inconvenience, Poor site management and supervision, Inappropriate construction method, Incompetent project team, Inadequate contractor experience and Unreliable subcontractor were rated consecutively. Lastly as the result shown in table 4-9 the relative important index and its ranks shows major of factors the delay related to contractor regards to the magnitude of COVID-19 pandemic period is Material price differences, Change in scope of design, Poor planning and coordination by the consultant engineer with other parties, Poor communication between the consultant engineer and other parties involved, Poor contract management, Delay in the preparation of drawings, Delay in the approval of contractor submissions by the consultant, Slow response from the consultant engineer to contractor inquiries, Delays in performing inspection and testing by the consultant engineer and Poor qualification of consultant engineer's staff assigned to the project were rated consecutively.

5.2 Conclusion

In conclusion, the main aim of this study is to assess the magnitude of construction delaying factors in construction projects of public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building during the (COVID-19), located in Addis Ababa Ethiopia, the impact caused by the pandemic and to describe body of knowledge areas being practiced assistance of managing the delay basis in the specific construction site of public servants social security agency (PSSSA). To attain the objective of this study different research approaches were applied. After a depth analysis of the data collected, the study has concluded the following delays in construction projects are experienced today with various Excusable and non-excusable delay factors and will continue to be experienced in future periods. Therefore, it is necessary to

predict and analyze the cause of the delays carefully to take precautions to control delays. An investigation of the cause and effects of delays for construction projects is crucial as it provides a positive contribution to the development of the construction industry..

5.3 Recommendation

Based on the findings of the research, the researcher recommends minimizing the gap for the next construction building phase for the construction project of the public servant's social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building and other construction sites it is best to develop work break down methods that can be done every three months for a year, weekly evaluation methods for monthly done phase and daily work break down methods for construction phase get done for a week

From this research paper findings identified by either from primary data like interview and questionnaire or secondary data like reviewing the document all contractors, consultant and the client should win this delay together while being considerate of the pandemic COVID-19, for instance, getting extra working hours with a different working schedule that consider congestion, and taking serious site health precaution.

To enhance this impact caused by the pandemic all clients, consultants, and contractors have to take their partials like the client should not frequently interfere like keep making changes, pay the contactors just in time, timely decision makings. The consultant of the project must prescribe the mechanism to solve disputes, and mechanism to evaluate the risk of delays so that possible risk factors can be foreseen and eliminated accordingly without causing major delays, the consultant should play a key role in communication between involved parties, monitor the work closely by making inspections at appropriate times. The contractors should also have well-experienced manpower, should provide proper planning and schedule to the consultant and they also have to make sure the subcontractors, materials, labor, and equipment is sufficient enough to continue when an unforeseen event as pandemic COVID-19 happen, should have work plan include not only detailed project steps but also schedules dedicated to the procurement of material and equipment, financing, and human resources.

Based on the above recommendation and follow the proper project management knowledge areas the effect of non-compensable delay as COVID-19 on the construction project of public servants

social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building will be minimized.

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APPENDICES

Appendix I

ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF PROJECT MANAGEMENT

Questionnaire and interview

Dear Respected Respondents:

This interview is conducted to collect data for a research on: monitoring and evaluation on delay factors in construction projects due to corona virus pandemic (COVID-19) specific sites on public servants social security agency (PSSSA) 4B+G+M+19 and two 4B+G+M+16) tower building. The information is going to be used as a primary data for this research. Therefore, your response and participation in the interview will be extremely valuable for the study. Please note that confidentiality of your response is secured and used only for the purpose of this study.

Thank you in advance for your voluntary participation.

Kind Regards

Name: Hayat Abdo
Tel: +251911449834
Email: yassinhau@gmail.com

General Instruction

- No need of writing your name
- Put (√)mark or circle your choice
- If you cannot get any satisfying choice among the given alternatives, you can write your answer, in the space provided for the option
- For the open ended items, give brief answer in the space provided.

Part I: demographic characteristics of the respondents

1. Indicate your gender
   Male [ ] Female []
2. Indicate your age Below

   30 [ ] 31 to 49 [ ] 50 and above [ ]

3. Indicate your educational level

Diploma [ ] Degree [ ] Post Graduate [ ]

4. Indicate your company's responsibility in the

Project Client [ ] Consultant [ ] Contractor [ ] Subcontractor [ ]

5. Indicate your job position in the company

Director [ ] Project Manager [ ] Construction Manager [ ] Project Engineer [ ] Worker [ ]Project architect [ ] procurement specialist [ ]

Part III: questions related to delay factors in construction projects due to corona virus pandemic (COVID-19) specific sites on public servants social security agency (PSSSA) 4B+G+M+19 and two 4B+G+M+16) tower building

Try to state your level of opinion for the using the following rating scales: Please use tick mark (√) on the space provided. Each scale represents the following rating:

VHE= VERY HIGH EXTENT

HE = HIGH EXTENT

ME= MODERATE EXTENT

LE= LOW EXTENT

VLE=VERY LOW EXTENT

Using a scale 1-5, Please tick (√) as appropriate.

1. Very high extent, 2. High extent, 3. Moderate extent, 4. Low extent, 5. Very low extent

To what extent do you consider the following factors affect Construction delay of the public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building? How do you rank each ones influence with respect to others?

No	Statement	VHE	HE	ME	LE	VLE	Rank
Project manager							
	On budget completion						
	Timely completion						
	inundated project planning and scheduling after the pandemic						
	Supply chain disruption						
	Work force disruptions on every level design ,field construction, manufacturing and inspections						
	Significant scope changes and project size						
	Loss of workers due to illness						
	Contamination of the virus						
	Absence of sufficient or well allocated resources due to the pandemic						
	Is there Practices of monitoring and evaluation due to *force majeure* event like COVID19						
	If yes, Does applying monitoring and evaluation in each level will be helpful in every project level						
Director							
	Change in contractor details						
	Significant scope changes and project size						
	Change in time schedule						
	Change in budget						
	Delay in progress payments						
	Change in communication among stakeholders						
	Is there Practices of monitoring and evaluation due to *force majeure* event like COVID19						
	Does applying monitoring and evaluation in each level will be helpful in every project level						
	Meeting pre determined standards						
	Exposure for the pandemic						
	Economic slow down						
	Loss of workers due to illness						
Project architect							
	Change in design						
	Change in schedule						

	Change in stakeholders meetings						
	Absence of sufficient or well allocated resources due to the pandemic						
	Not included COVID-19 disruption constitute a *force majeure* event under a contract						
	inundated project planning and scheduling after the pandemic						
	Significant scope changes and project size						
Senior project engineers							
	Coordinating project manager and project						
	Loss of workers due to illness						
	Rework due to errors						
	Delay in design approval and project level complexity						
Procurement specialist							
	Disruptions on price comparing						
	On budget completion						
	Supply chain disruption						
	Transport and logistics						
	Foreign currency rate						
	Keeping costs within budget						
	Waiting on additional equipment and repair						

Part II: **General open-ended questions**

Survey on workers about COVID-19

1 Have you been tested for the corona virus (awaiting results)? If yes, stay home until results are received

YES[ ] NO [ ]

2 Have you tested POSITIVE for the coronavirus? If yes, stay home for 14 days after symptoms are gone.

YES[ ] NO [ ]

3 Have you had prolonged close contact with someone who tested positive for the coronavirus? If yes, stay home for 14 days and return to work if no symptoms.

YES[ ] NO [ ]

4. Does COVID-19 affects the practice of Project Management in the project you are participating or in the organization you are working

Yes[ ] No[ ] N/A[ ] I/DK [ ]

5Does your company preplanned for *force majeure* delaying factors

6. Does the your company has Practices of monitoring and evaluation due to *force majeure* event like COVID19

7. What other factors do you think COVID-19 pandemic has caused on Construction delay of the public servants social security agency (PSSSA) (4B+G+M+19 and two 4B+G+M+16) tower building? Please list as many factors as you have

i. _____
ii. _____
iii. _____
iv. _____
v. _____

INTERVIEW QUESTIONS

1. Is the construction project of PSSSAbuilding on
2. Did you consider COVID-19 has an impact on the construction delay
3. For how long is the construction delayed specifically during COVID-19
4. What are the reasons for those delays
5. What are the restrictions comes from the governorspecifically about the pandemic and the construction
6. How roles and responsibilities, communicated to all team and stakeholders?
7. Who will be more affected of this delay(contractor, consultant or the client)
8. Tell me in example how the pandemic affects the construction
9. Do you reduce number of workers to reduce the pandemic effects or they afraid of the pandemic
10. Do you have monitoring ad evaluation practice specifically made for the delay during the pandemic?
11. Did you notice early warning signs of problems that occurred in the project, and did you Responded in time?
12. What are the planned actions to reduce the gap of the impact?

Thank you for your time appreciate it

Appendix II: DATA FROM THE ORGANIZATION

EVALUATION FOR TIME EXTENSION-02

Project:-Construction of PSSSA Head quarter and Regional Office Building Project
Employer:- PSSSA
Contractor:- CJIC
Consultant :- Yohannes Abbay Consulting Architects and Engineers
Location:- Piassa

Option-01

Item	Reasons and Days claimed by Contractor	Consultant's Evaluation for the Claim	Enclosed Number of Pages	Accepted Days
1	46 days due to Design Revision	Contractor's letter (PSSSA-2018/0618/01 on 6/10/2018) stating the order by client to wait for the revised design on a meeting held on Sept-6/18: - (Signed MoM is not enclosed.) (1 page) Contractor tells by Sept 13/2019 for finalizing shoring work: - Their letter PSSSA-2018/0913/01 (1 page) Rebar for mat was started on oct-26/18: - RFI #00023 (1 page) Order for work suspension by consultant till for revised Design: Nov 1/18 (YACAE/PSSSA/009/18) (1 page) Revised Design delivery: On 08/11/18 with letter YACAE/PSSSA/016/18 (1 page) difference for delay 08/11/18-02/11/18=7days	5-pages	7.00
2&3	180 days are claimed due to COVID-19		40-pages	180.00
	Phase-1: Domestic level effect	COVID reported in Ethiopia: - Megabit 3/2012 (March 12/20) (YACAE/0569/20 dated on Mar 24/20) (1-page enclosed). Days after the report, A.A Construction office gives directive (number 001/2012) to projects in Addis to reduce workers by 50% and customize for shift works: (6-pages). Despite of the directive above, workers were absent from work and shortage for labors has occurred (Contractor's Letters and Daily Data Records by Consultant). - Letter-CJIC/PSSSA/20191228/02 written on May 18; 2020 (3-pages) - Daily Data Records-From April 01-April 30 (30-pages) According to the data recorded (sampled for the month of April/20), labour reduction was found to be: - 40.89%. Directive by A.A Construction office was lifted: on Nehase 30/2012 E.C (Sept 5/2020). (Has no Enclosure). Project level COVID-Impact={40.89*(Sep 5 - Mar 12)}/100=180 days		
	Phase-2: Global level effect	- Documents for the specific effects of covid to the project in global level are submitted by the contractor. Among these; letters from "China Contractors Association" (CHINCA-LC (2020) 111 Dated on 2020/05/11 (1-page) and Letter BLP/054/2020 dated on 18/08/2020. from transporting company named "Bells Logistic PLC" are the Major evidences. (1-page) - Letter from china contractors association tells factory lock down from Jan 1/2020-March 10/2020 in china and justifications for transporting containers by Bells Logistic PLC was not considered since time was overlapping with case in Phase-I. Professionals visit to china for finishing materials approval: Dec 08-15/2019 Document submission for floor & wall finishing & sanitary fixtures approval request by contractor after the physical approval: On Dec 28/20 through letters CJIC/PSSSA/20191228/01. (1-page) Submission of Sample of selected documents for Sanitary Fixtures: On Jan 30; 2020; CJIC/PSSSA/20200130/02. (1-page) Response for the approval Request by consultant contractor to submit actual sample for approval: On Jan 31/2020 through letters YACAE/0219/20 and YACAE/0220/20. (i.e. Conditional Approval for the Production.) (2-pages). Contractor's difficulty for not submitting actual samples due to covid movement ban in china: Feb 4; 2020 (CJIC/PSSSA/20200204/03). (1-page) Contractor claim to consider covid as force measure: Feb 25th; CJIC/PSSSA/20200225/01. (2-pages). Consultant's Reply to proceed with locally approved materials for the granite floor finish & bring authentication documents for materials from abroad: Mar 3/20; YACAE/0400/20. (1-page) Contractor submits the authentication documents: March 7; 2020; CJIC/PSSSA/20200307/01 (2-pages). The possible date for factory order is: -March 7; 2020.	12-pages	3.00

_____Prepared By

1/2

_____Checked By

Project:-Construction of PSSSA Head quarter and Regional Office Building Project
Employer:- PSSSA
Contractor:- CJIC
Consultant :- Yohannes Abbay Consulting Architects and Engineers **Option-01**
Location:- Piassa

Item	Reasons and Days claimed by Contractor	Consultant's Evaluation for the Claim	Enclosed Number of Pages	Accepted Days
		Hence; delay for the production due to covid can be calculated as: Mar 7 - Mar 10=3Days		
4	Shortage for concrete pump (3 days requested)	Time is overlapping and considered on #1 above. Hence; no extension due to concrete pump shortage		-
5	Cement shortage (25days requested)	Contractor notifies to stop work after 3 days due to cement shortage on sep16/20; CJIC/PSSSA/20200916/01 (1-page).	9-pages	17.00
		Client's Supportive letter to Cement factories and Ethiopian Industrial Inputs Enterprise: On 12/12/2012 (Aug 18/20); With Ref No: ነ.ጠ2.1/65/615/12. (1-page).		
		Contractor pays for 2,000 Qtl cement to Ethiopian Industrial Inputs Enterprise: On Sep 9/20; Invoice No.1961769 (1-page).		
		First round cement delivered to project site from Ethiopian Industrial Inputs Enterprise (site diary record: on October 3/2020. (2-pages).		
		Second round delivery was on Nov 9/2020 (site diary record: on Nov 9/2020. (2-pages).		
		Delay considered due to cement shortage =OCT 3-Sep 16=17 days		
6	Disruption due to rain (53 days requested)	According to the attached rainfall data from Ethiopian Metriological Agency and site diary Records, rainy times before July 3; 20 (Sene 26/2013). Hence; considering rain times in the previous three months; i.e April-1 to July 3, the delay due to the rain founds to be 17days.	2-pages	17.00
7	Disruption due of work due to Covid 19 from Aug 24-31 (8 days requested).	Time is overlapping and considered on #1 above. Hence; no extension due to covid positive test result for two Chinese foremen's		-
8	Disruption due due to the Inauguration of sheger park (4 days requested).	Time is overlapping and considered on #1 above. Hence; no extension due to inauguration of sheger park		
		Total Sum		**224.00**

_____Prepared By 2/2 _____Checked By